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(54) **Optical fiber link card.**

(57) An optical fiber link card communication module, and process for fabricating the module, where the module provides a parallel electrical interface to the user, facilitates high speed serial transmission of data over an optical data link, and contains a plurality of converters (130,131) for performing conversions between both electrical and optical signals. The module further includes edge mounted optical components having leads mounted on the surface of a card (as opposed to standard pin-in-hole type leads) to minimize lead capacitance and inductance from the optical components to the card electronics, on board card control means for the converters and safety shut down means on the same card as the

electrical and optical components. A preferred embodiment of the invention contemplates fabricating the optical communication module on a single multilayer card with all the transmitter electrical components being located on one side of the card, all receiver electrical components being located on the other side of the card, and the transmitter and receiver components being separated by shielding layers in the card. By using two transmitter/receiver pairs (with the transmitters and receivers being located on respective sides of the card) an embodiment of the invention provides for double full duplex communications.

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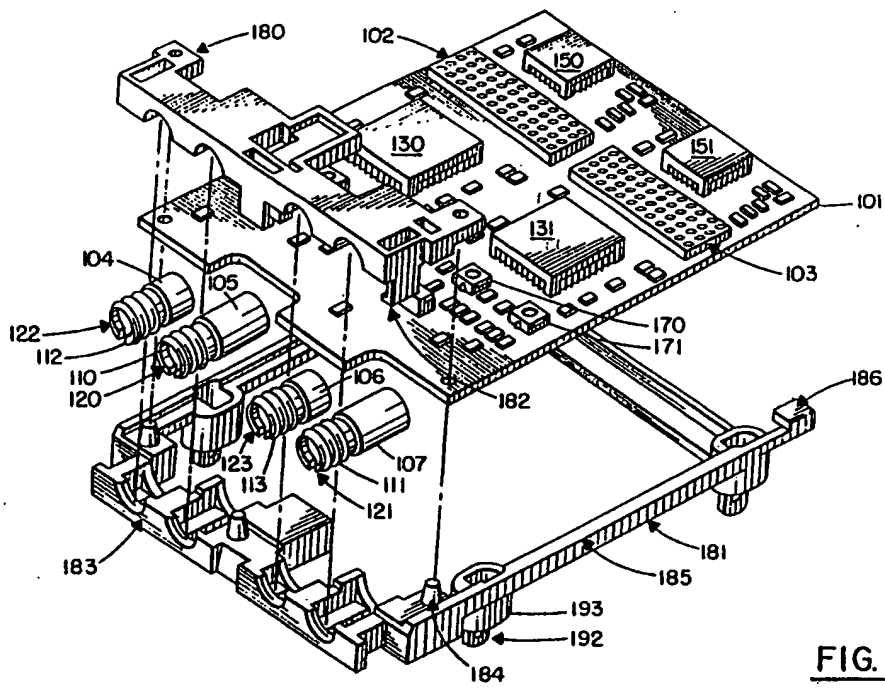


FIG. 1.



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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. CL.5)
X	OPTICAL FIBRE COMMUNICATION CONFERENCE 1989 TECHNICAL DIGEST SERIES vol. 5, February 1989, HOUSTON, US pages 83 - 84; CROW: 'Optoelectronic integrated circuits for high speed computer networks' * page 83, left column, line 21 - line 27 * * page 83, left column, line 40 - line 42 * * page 83, right column, line 3 - line 15; figures 1,2 *	1,2,6	H04B10/00 G02B6/42 H04B10/14
Y		3,4, 7-10, 14-18	
A		5,11-13, 19-21	
X	EP-A-0 247 988 (ADC TELECOMMUNICATIONS) * column 6, line 15 - line 25 * * column 6, line 36 - line 42 * * column 7, line 6 - line 33 * * column 7, line 49 - line 52 * * column 8, line 21 - line 24 * * column 8, line 53 - line 60; figures 29,42-51 *	1	
A		2-21	TECHNICAL FIELDS SEARCHED (Int. CL.5)  H04B G02B H05K
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 26 MAY 1992	Examiner WILLIAMS Michael
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document  T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons  Δ : member of the same patent family, corresponding document			



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Y	PROCEEDINGS OF THE 36TH ELECTRONIC COMPONENTS CONFERENCE May 1986, SEATTLE, US pages 280 - 284; YOKOYAMA ET AL: 'High-density optical digital datalink with double-sided packaging' * page 280, left column, line 37 - line 44 * * page 280, right column, line 32 - line 34 * * page 281, left column, line 3 - line 6 * * page 281, right column, line 4 - line 6 * * page 281, right column, line 31 - line 53; figures 2,4 *	3,7,8, 14-18	
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Y	ELEKTRONIK, vol. 35, no. 26, 23 December 1986, MÜNCHEN DE pages 81 - 88; HASE: 'Rechnerinternes optisches Bussystem mit Lichtleiterplatte' * page 83, right column, line 32 - line 34 * * page 84, left column, line 4 - line 8; figures 2,5,6 *	4,9,10	
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A	ELECTRONICS LETTERS, vol. 16, no. 1, 3 January 1980, HITCHIN GB pages 7 - 8; CHEN: 'Simultaneous feedback control of bias and modulation currents for injection lasers' * page 7, left column, line 1 - line 7 *	4	
A	EP-A-0 314 651 (IBM) * abstract * * column 3, line 38 - line 41 * * column 3, line 57 - column 4, line 4; figure 1 *	1-21	
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The present search report has been drawn up for all claims			
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X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document		T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons ----- &: member of the same patent family, corresponding document	



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A	CONFERENCE ON OPTICAL FIBER COMMUNICATION 12 February 1985, SAN DIEGO US pages 38 - 40; EWEN ET AL: 'Single-chip 100Mbit/sec fiber-optic receiver/phase lock loop circuit' * page 38, left column, line 6 - line 10 * * page 38, left column, line 15 - line 23 * * page 38, left column, line 32 - line 36; figure 1 *	1,6,7,9, 10	
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